

DIVISION 5 - METALS		
Section 05015	Chain Link Fencing	05015_Jan04_2005.pdf
Section 05025	Deck Drains	05025_Jan04_2005.pdf

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05015-1 DESCRIPTION

This section specifies requirements for supply and installation of chain link fence and gates.

05015-2 MATERIALS

2.1 General

2.1.1 Concrete:

1. Compressive strength 20 MPa minimum 28 days.
2. Coarse aggregate 19.0 mm maximum size.

2.1.2 Chain Link Fence Fabric: to CAN2 138.1.

1. Zinc coated steel.
2. Height of wire, 1200 mm or 1800 mm, as per drawing.
3. Size of wire, 3.5 mm diameter.
4. Size in mesh, 50 mm.
5. Knuckled at one selvage and twisted at other.

2.1.3 Posts and rails: to CAN2 138.1 galvanized steel pipe, standard weight, sizes as per drawings.

2.1.4 Tension wire: single strand, galvanized steel wire, 5 mm diameter.

2.1.5 Fasteners: single strand, aluminium or galvanized steel wire conforming to requirements of fence fabric, 3.5 mm diameter.

- 2.1.6 Tension bar:** 5 x 20 mm min. galvanized steel.
- 2.1.7 Tension bar bands:** 3 x 20 mm min. galvanized steel or 5 x 20 mm min. aluminium.
- 2.1.8 Pedestrian screen:** to standards herein and to sizes and dimensions indicated in drawings.
- 2.1.9 Gate frames:** to ASTM A120, galvanized steel pipe, standard weight, 45 mm O.D. pipe for outside frame, 35 mm O.D. pipe for interior bracing.
1. Gates fabricated as indicated, electrically weld joints and hot-dip galvanize after welding.
 2. Fence fabric fastened to gate with twisted selvage at top.
 3. Gates furnished with galvanized malleable iron hinges, latch and latch catch with provision for a padlock which can be attached and operated from either side of installed gate.
 4. Double gates furnished with a chain hook to hold gates open and a centre rest with drop bolt for closed position.
- 2.1.10 Fittings and hardware:** cast aluminium alloy, or galvanized steel, malleable or ductile cast iron. Post caps designed to provide a waterproof fit, to fasten securely over posts and to carry top rail.
- 2.1.11 Zinc pigmented paint:** to CGSB 1-GP-178M.

2.2 Finishes

2.2.1 Galvanizing

1. For chain link fabric: to CAN2 138.1 Grade 1.
2. For pipe: 570 g/m² minimum to CSA B63.
3. For other fittings: to CSA G164.

05015-3 CONSTRUCTION

3.1 Grading

3.1.1 Inspect site and confirm that rough grading by the City of Saskatoon to within 200 mm of final ground line has been completed. Commencement of work this section implies acceptance of site conditions.

3.1.2 Remove debris and correct ground undulations along fence line to obtain a smooth uniform gradient between posts. Provide clearance between bottom of fence and ground surface neither less than 40 mm nor more than 75 mm.

3.1.3 Clean up for 1.5 m on both sides of fence line taking care not to extend operations beyond property limits.

3.2 Erection of Fence

3.2.1 Erect fence along lines indicated or established by Engineer.

- 3.2.2 Excavate post holes to indicated depths by approved methods.
- 3.2.3 Space line posts 3 m apart; measured parallel to ground surface.
- 3.2.4 Space straining posts at equal intervals not exceeding 150 m if distance is greater than 150 m between end or corner posts on straight continuous lengths of fence over reasonably smooth grade.
- 3.2.5 Install additional straining posts at sharp changes in grade and where Engineer directs.
- 3.2.6 Install corner post where change in alignment exceeds 20 degree angle.
- 3.2.7 Install end posts at end of fence and on both sides of gate openings.
- 3.2.8 Set posts in concrete. Extend concrete 50 mm above ground level and slope to drain away from posts. Brace to hold posts in plumb position and true to alignment and elevation until concrete has set. Do not concrete posts when air temperature is less than 5 C without Engineer's approval.
- 3.2.9 Do not install fence fabric until concrete has cured a minimum of 5 days.
- 3.2.10 Install brace between end and gate posts and nearest line post, placed in centre of panel and parallel to ground surface. Install braces on both sides of corner and straining posts in similar manner.
- 3.2.11 Install top rail between posts and fasten securely to posts with waterproof caps.

- 3.2.12 Install bottom tension wire, stretch tightly and fasten securely to end, corner, gate and straining posts with drop forged turnbuckles and tension bar bands.
- 3.2.13 Lay out fence fabric, stretch tightly and fasten to end, corner, gate and straining posts with tension bar secured to post with tension bar bands spaced at 300 mm intervals.
- 3.2.14 Secure fabric to top rails, line posts and bottom tension wire with tie wires at 450 mm intervals. Give tie wires no less than two twists.

3.3 Erection of Gates

- 3.3.1 Erect gates in locations indicated.
- 3.3.2 Set gate bottom approximately 40 mm above ground surface.
- 3.3.3 Determine position of centre gate rest for double gate. Cast gate rest in concrete. Dome concrete above ground level to shed water.
- 3.3.4 Install gate stops where indicated.

3.4 Patching

- 3.4.1 Repair damaged galvanized surfaces. Clean damaged surfaces with wire brush removing loose and cracked spelter coatings. Apply two coats of approved zinc pigmented paint to damaged areas.

3.5 Cleaning

3.5.1 Clean and trim areas disturbed by operations. Dispose of surplus excavated material and replace damaged sod as directed.

05015-4 MEASUREMENT AND PAYMENT

Measurement and Payment for chain link fencing will be on a unit price basis per lineal meter of chain link fence installed and include of material, labour and equipment required to supply and construct chain link fencing of the required height.

Measurement and payment of chain link fence gates will be on a unit price basis per each gate installed and include all material, labour and equipment required to supply and install a chain link gate of the required width.

05015-5 PIPE PROPERTIES AND DIMENSIONS

	Diameters		*Type	Wall Thick-ness	Weight Per Foot	Areas of Metal	I	S	r
Nominal	External	Internal							
In.	In.	In.		In.	Lb.	In. ²	In. ⁴	In. ³	In.
½	.840	.622	Std	.109	.85	.250	.017	.041	.261
		.546	XS	.147	1.09	.320	.020	.048	.250
		.252	XXS	.294	1.71	.504	.024	.058	.219
¾	1.050	.824	Std	.113	1.13	.333	.037	.070	.334
		.742	XS	.154	1.47	.433	.045	.085	.321
		.434	XXS	.308	2.44	.718	.058	.110	.248

	Diameters		*Type	Wall Thick-ness	Weight Per Foot	Areas of Metal	I	S	r
Nominal	External	Internal							
In.	In.	In.		In.	Lb.	In. ²	In. ⁴	In. ³	In.
1	1.315	1.049	Std	.133	1.68	.494	.087	.133	.420
		.957	XS	.179	2.17	.639	.106	.161	.407
		.599	XXS	.358	3.66	1.08	.140	.214	.361
1 ½	1.900	1.610	Std	.145	2.72	.799	.310	.326	.623
		1.500	XS	.200	3.63	1.07	.391	.412	.605
		1.100	XXS	.400	6.41	1.88	.568	.598	.549
2	2.375	2.067	Std	.154	3.65	1.08	.666	.561	.787
		1.939	XS	.218	5.02	1.48	.868	.731	.766
		1.503	XXS	.436	9.03	2.66	1.31	1.10	.703
2 ½	2.875	2.469	Std	.203	5.79	1.70	1.53	1.06	.947
		2.323	XS	.276	7.66	2.25	1.92	1.34	.924
		1.771	XXS	.552	13.70	4.03	2.87	2.00	.844
3	3.500	3.068	Std	.216	7.58	2.23	3.02	1.72	1.16
		2.900	XS	.300	10.25	3.02	3.89	2.22	1.14
		2.300	XXS	.600	18.58	5.47	5.99	3.42	1.05
3 ½	4.000	3.548	Std	.226	9.11	2.68	4.79	2.39	1.34
		3.364	XS	.318	12.51	3.68	6.28	3.14	1.31
4	4.500	4.026	Std	.237	10.79	3.17	7.23	3.21	1.51
		3.826	XS	.337	14.98	4.41	9.61	4.27	1.48
		3.152	XXS	.674	27.54	8.10	15.28	6.79	1.37

	Diameters		*Type	Wall Thick-ness	Weight Per Foot	Areas of Metal	I	S	r
Nominal	External	Internal							
In.	In.	In.		In.	Lb.	In. ²	In. ⁴	In ³	In.
5	5.563	5.047	Std	.258	14.62	4.30	15.2	5.45	1.88
		4.813	XS	.375	20.78	6.11	20.7	7.43	1.84
		4.063	XXS	.750	38.55	11.34	33.6	12.1	1.72
6	6.625	6.065	Std	.280	18.97	5.58	28.1	8.50	2.25
		5.761	XS	.432	28.57	8.41	40.5	12.2	2.20
		4.897	XXS	.864	53.16	15.64	66.3	20.0	2.06
8	8.625	7.981	Std	.322	28.55	8.40	72.5	16.8	2.94
		7.625	XS	.500	43.39	12.76	106.	24.5	2.88
		6.875	XXS	.875	72.42	21.30	162.	37.6	2.76
10	10.750	10.020	Std	.365	40.48	11.91	161.	29.9	3.67
		9.750	XS	.500	54.74	16.10	212.	39.4	3.63
		8.750	XXS	1.000	104.13	30.63	368.	68.4	3.47
12	12.750	12.000	Std	.375	49.56	14.58	279.	43.8	4.38
		11.750	XS	.500	65.42	19.24	362.	56.7	4.34
		10.750	XXS	1.000	125.49	36.91	642.	101.	4.17

* Type refers to : Standard Weight - Std., Extra Strong - XS, Double Extra Strong - XXS.

END OF SPECIFICATION 05015

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05025-1 **DESCRIPTION**

The work shall consist of hydro blasting, rotor routing and/or vibrating loose debris in the deck drain leads on the following bridges: Idylwyld (and ramps) and University Bridge.

05025-2 **MATERIALS**

The Contractor shall supply all materials to carry out the work.

05025-3 **EQUIPMENT**

The following equipment shall be available for use and in good working order:

- one - hydro blaster capable of 8,000 psi.
- one - roto router capable of routing 50 to 100 feet.
- two - 50 gallon tanks with a pump capable to discharge at the rate of 50 gallons per minute.

The equipment cited shall not be limited to the work but only as a minimum.

05025-4 **PROCEDURE**

The Contractor shall rod or hydro blast the vertical deck drain leads on the blocked leads of the University Bridge.

On the Idylwyld Bridge the Contractor shall remove the catch basin grating and test for blockage using 50 gallons of water. If the leads are clear, the Contractor shall replace the catch basin grating to the satisfaction of the Engineer and proceed to the next catch basin.

Where the catch basin lead is clogged, the Contractor shall use the cited equipment to try to clear the lead. In the event that there is no significant progress in the unclogging process, the Engineer shall decide when to stop the endeavour. His decision is final.

05025-5 TEST

Where directed by the Engineer, the Contractor shall cause to be discharged up to 500 gallons of water into a catch basin lead. This is to demonstrate to the Engineer that the lead is open.

05025-6 PAYMENT

Payment shall be on an hourly basis for:

- i) Cleaning the leads on the University Bridge.
- ii) Cleaning the leads on the Idylwyld Bridge.

The rates shall include all labour, materials and equipment to carry out the work as well as the cost for traffic control.

The payment for the test shall be as specified on a per gallon basis. Included in this shall be the cost of the water and equipment necessary for the test.

END OF SPECIFICATION 05025